



January 18, 2021

The Hon. Jeff Yurek
Minister of the Environment, Conservation and Parks
5th Floor – 777 Bay Street
Toronto, ON M7A 2J3

Res Submission regarding Ontario Low-Carbon Hydrogen Strategy

Dear Minister Yurek,

The Ontario Geothermal Association (OGA) is the non-profit association representing the geothermal heating and cooling system designers, drillers, installers, equipment manufacturers and distributors. The OGA's mission is to advance the group source industry by forming strong connections between the public, governments and industry professionals. The OGA is a resource for industry professionals and a voice to increase awareness of the importance of working toward the use of a greener, cleaner and self-sustaining energy source.

The OGA applauds the provincial government's efforts to pursue low carbon initiatives and strategies and are pleased to provide recommendations. We share the government's concerns about the pressing need to address the environmental priorities of Ontario. Given the devastating impacts of COVID-19, we also fully understand and support the need to restore the provincial economy to its previous levels of economic activity.

We would be pleased to discuss the additional information and recommendations below.

Thank you for the opportunity to contribute to this important discussion.

A handwritten signature in black ink, appearing to read 'Jeff Hunter'.

Jeff Hunter
Vice President, OGA
GPA Inc.

A handwritten signature in black ink, appearing to read 'Stan Reitsma'.

Stan Reitsma
President, OGA
CEO, GeoSource Energy

BACKGROUND

The OGA supports and applauds the provincial government's efforts to reduce carbon emissions and to pursue low carbon initiatives and strategies. We share the government's concerns about the pressing need to address the environmental priorities of Ontario. Given the devastating impacts of COVID-19, we also fully understand and support the need to restore the provincial economy to its previous levels of economic activity.

However, as industry experts, we are concerned with the provincial government's pursuit of a Hydrogen Strategy as it relates to the **heating and cooling** of homes, workplaces, industrial and commercial buildings.

We understand that the transition to the low / net zero carbon economy is critically important. We also appreciate that certain industries, employers and employees need to be supported throughout this coming transition.

However, we also understand the challenging fiscal situation which the provincial government and governments across the country are facing. Given that, we question the efficacy of governments investing in a Hydrogen Strategy for heating and cooling when **existing technologies** are readily available, those being **Air Source Heat Pumps and Ground Source Heat Pumps**.

The OGA questions why the provincial government would invest scarce financial resources to develop a strategy for a fuel source that is already known to be **6 to 8 times less efficient** and therefore **6 to 8 times more expensive** than heating and cooling with geothermal¹. The OGA recommends the provincial government focuses its efforts on a **Low Carbon Geothermal Strategy** for heating and cooling homes and business rather than a Hydrogen Strategy for this sector.

A **Low Carbon Geothermal Strategy** will enable legacy improvements in homes and workplaces that will create new employment opportunities, reduce energy costs, increase building performance, indoor comfort and air quality while reducing greenhouse gas (GHG) emissions produced by the built environment with existing, proven technologies.

¹ Assuming cost of electricity is similar for operating heat pump and generating hydrogen. While the argument can be made that hydrogen generation can operate when there is excess electricity, the same can be done with geothermal and local battery and/or thermal storage. Electrical pricing should be the same for both systems because they provide the same benefits of low carbon emissions and possible electrical demand side management.

To support this recommendation, in Appendix A, we have included a recent study - [The Economic Value of Ground Source Heat Pumps for Beneficial Electrification](#) - by Dunskey Energy Consulting which outlines the impacts to the electricity grid associated with the broad adoption of ground-source heat pumps (GSHP). This study was commissioned by OGA in partnership with HRAI.

In a world affected by COVID-19, our sector understands Ontarians' increasing interest in ensuring healthy and safe indoor air environments, reducing GHG emissions produced by the heating and cooling of homes and buildings and the need for new economic development opportunities.

The geothermal industry has the technology and know-how **today** to create and maintain healthy, sustainable conditions through proper treatment of air that will help to ensure homes and businesses remain functional.

We also have the expertise necessary to drive down energy costs and, with targeted support from government, to reduce emissions while creating new, quality employment opportunities.

RECOMMENDATIONS

Cost Avoidance Opportunity: The recent study - [The Economic Value of Ground Source Heat Pumps for Beneficial Electrification](#) - (see Appendix A) outlines the tremendous cost avoidance opportunities available if heating and cooling were conducted using ground source heat pumps rather than air source heat pumps (assumed as the default in most electrification plans). The **avoided total societal** cost of electrification would be \$357 billion over the next 30 years. The study quantifies the system-wide benefits of GSHPs by demonstrating that the **avoided** electricity system development costs will more than pay for the investment in these heating systems.

The cost avoidance opportunities increase **dramatically** when geothermal technology is compared to the development of the very high costs involved with the development and utilization of hydrogen as a heating and cooling technology as is outlined in the Ontario Low-Carbon Hydrogen Strategy Discussion paper.

Create a Low-Carbon Geothermal Strategy: To decarbonize the heating and cooling of homes and buildings (commercial, institutional, industrial for all sizes), utilizing existing technology and energy sources, the OGA recommends that the provincial government create a **Low-Carbon Geothermal Strategy** specifically focused on Ground Source Heat Pumps and Geothermal energy.

Although injecting hydrogen into natural gas has the potential to lower carbon emissions created by natural gas, it will at a significant cost and will achieve maximum reduction in carbon emissions of 3% to 4% while still necessarily relying on the combustion of natural gas. There is no road to getting to significantly higher emission reductions with hydrogen injection into natural gas supply. Geothermal solutions do not suffer from this limitation, where each installed system can completely eliminate the need for fossil fuel use at point of use.

Geothermal technology exists, is readily available (aside from some areas with geological barriers) and can achieve the goal of decarbonization of the heating and cooling of buildings immediately at a significantly lower cost to the provincial government. It can be utilized without requiring massive electricity system upgrades.

Ground Source Heat Pumps (GSHP) are uniquely able to mitigate peak electricity generation requirements. The report (Appendix A) identifies the advantages of ground-source heat pumps to individual residential and commercial building occupants, to the electricity system and to all Ontarians.

Due to their reliance on stable thermal energy stored in the ground, GSHPs perform with high efficiency regardless of outdoor air temperatures. Even on the coldest days of winter, the systems perform at a Coefficient of Performance (COP)s of 3.0 or higher. If deployed at widely across Ontario, scale, GSHPs can be used to reduce peak electricity demand for the whole grid.

APPENDIX A:

[The Economic Value of Ground Source Heat Pumps for Beneficial Electrification](#)